

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

- 1 1. (original) A method of optimizing spare component management for a network
2 having a plurality of nodes, comprising:
3 obtaining availability parameters associated with an inventory of spare
4 components; and
5 determining a plurality of management configurations in response to said
6 availability parameters, each of said plurality of management configurations comprising
7 at least one warehouse node selected from said plurality of nodes and a quantity of spare
8 components in said inventory to be stored at said at least one warehouse node.
- 1 2. (original) The method of claim 1, further comprising:
2 selecting at least one warehouse configuration for said plurality of nodes; and
3 repeating said determining step for each said warehouse configuration.
- 1 3. (original) The method of claim 2, wherein said at least one warehouse
2 configuration comprises a distributed warehouse configuration and a centralized
3 warehouse configuration.
- 1 4. (original) The method of claim 1, wherein said inventory of spare components is
2 defined by a plurality of component types, and said availability parameters comprise at
3 least one of a failure rate, a minimum repair time, a restocking time, and a stockout
4 probability associated with each of said plurality of component types.
- 1 5. (original) The method of claim 4, further comprising:
2 for each of said plurality of management configurations, computing an expected
3 downtime of said network using said minimum repair time associated with at least one of
4 said plurality of component types.

1 6. (original) The method of claim 5, wherein, for each of said plurality of
2 management configurations, said expected downtime of said network is further computed
3 using delivery times from said at least one warehouse node to remaining ones of said
4 plurality of nodes.

1 7. (original) The method of claim 4, further comprising:
2 obtaining a critical repair time associated with each of said plurality of component
3 types; and
4 for each of said plurality of management configurations, computing a number of
5 expected critical repair time violations.

1 8. (original) The method of claim 4, wherein said determining comprises:
2 obtaining a target stockout probability for each of said plurality of component
3 types;
4 for each of said plurality of management configurations, computing said quantity
5 of spare components to be stored at said at least one warehouse node by adjusting a
6 quantity of each of said plurality of component types until said respective stockout
7 probability is less than or equal to said respective target stockout probability.

1 9. (original) The method of claim 1, wherein said inventory of spare components is
2 obtained dynamically from said network.

1 10. (original) The method of claim 1, wherein said availability parameters are
2 obtained dynamically from said network.

1 11. (original) A computer readable medium having stored thereon instructions that,
2 when executed by a processor, cause the processor to perform a method of optimizing
3 spare component management for a network having a plurality of nodes, comprising:
4 obtaining availability parameters associated with an inventory of spare
5 components; and

6 determining a plurality of management configurations in response to said
7 availability parameters, each of said plurality of management configurations comprising
8 at least one warehouse node selected from said plurality of nodes and a quantity of spare
9 components in said inventory to be stored at said at least one warehouse node.

1 12. (original) The computer readable medium of claim 11, further comprising:
2 selecting at least one warehouse configuration for said plurality of nodes; and
3 repeating said determining step for each said warehouse configuration.

1 13. (original) The computer readable medium of claim 12, wherein said at least one
2 warehouse configuration comprises a distributed warehouse configuration and a
3 centralized warehouse configuration.

1 14. (original) The computer readable medium of claim 11, wherein said inventory of
2 spare components is defined by a plurality of component types, and said availability
3 parameters comprise at least one of a failure rate, a minimum repair time, a restocking
4 time, and a stockout probability associated with each of said plurality of component types.

1 15. (original) The method of claim 4, further comprising:
2 for each of said plurality of management configurations, computing an expected
3 downtime of said network using said minimum repair time associated with at least one of
4 said plurality of component types.

1 16. (original) The computer readable of claim 15, wherein, for each of said plurality
2 of management configurations, said expected downtime of said network is further
3 computed using delivery times from said at least one warehouse node to remaining ones
4 of said plurality of nodes.

1 17. (original) The computer readable medium of claim 14, further comprising:
2 obtaining a critical repair time associated with each of said plurality of component
3 types; and

4 for each of said plurality of management configurations, computing a number of
5 expected critical repair time violations.

1 18. (original) The computer readable medium of claim 14, wherein said determining
2 comprises:

3 obtaining a target stockout probability for each of said plurality of component
4 types;

5 for each of said plurality of management configurations, computing said quantity
6 of spare components to be stored at said at least one warehouse node by adjusting a
7 quantity of each of said plurality of component types until said respective stockout
8 probability is less than or equal to said respective target stockout probability.

1 19. (original) An apparatus for optimizing spare component management for a
2 network having a plurality of nodes, comprising:

3 means for obtaining availability parameters associated with an inventory of spare
4 components; and

5 means for determining a plurality of management configurations in response to
6 said availability parameters, each of said plurality of management configurations
7 comprising at least one warehouse node selected from said plurality of nodes and a
8 quantity of spare components in said inventory to be stored at said at least one warehouse
9 node.

1 20. (original) A system optimizing spare component management for a network
2 having a plurality of nodes, comprising:

3 a processing unit having access to one or more storage devices;

4 at least a portion of the one or more storage devices storing an inventory of spare
5 components and availability parameters associated with said inventory;

6 at least another portion of said one or more storage devices having a program
7 product configured to determine a plurality of management configurations in response to
8 said availability parameters, each of said plurality of management configurations
9 comprising at least one warehouse node selected from said plurality of nodes and a

10 quantity of spare components in said inventory to be stored at said at least one warehouse
11 node.